Efficacy of Varma Therapy on Physiological Variables in Male Persons with Diabetic Peripheral Neuropathy (DPN)

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Abstract:

Diabetes is a metabolic disorder in which the body does not properly Insulin hormone secreted by the pancreas.Chronic complications included peripheral neuropathy, which is nerve damage brought on by diabetes and excessively high blood sugar. It causes numbness, a loss of feeling, and occasionally discomfort in our hands, legs, or feet. It is the most frequent side effect of diabetes.Important physiological parameters like systolic and diastolic blood pressure and body mass index(BMI) have been researched in studies of DPN individuals.30 males with diabetic peripheral neuropathy were chosen randomly between the ages 35-70 for the study. Two groups were formed from the selected subjects with 15 members in each group. One underwent experimental groups another underwent control group . Group I received a Varma therapy with 17 Varma points along with massage and Group II underwentwithoutany practise. 12-week training period, 6 days per week, an hour in the morning.People with DPN who receive Varma therapy had better nerve function and decreased DPN levels. Varma treatment improves the physiological variables performance of the persons affected by DPN. Varma Therapy (Group-I) were significantly more effective than other control group.

Key Words: Diabetes, Varma Therapy, Diabetes Peripheral Neuropathy, physiologicalVariables.
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1.INTRODCTION :

1.1 Diabetes

Diabetes is one of the largest challenges in world healthcare in the twenty-first century. The International Diabetes Federation predicts that by 2045, 629 million people (20-79 years old) would have diabetes, up from an estimated 425 million in 2017. Diabetic Peripheral Neuropathy has been one of diabetes most common side effects.Chronic Diabetes consequences includes to vessel disease, which can cause heart attacks or strokes; infections or skin conditions;retinopathy, which affects the eyes; neuropathy, which affects the nerves; nephropathy, which affects the kidneys; and amputations brought on by neuropathy.The burden of diabetes has steadily increased over the past quarter century in India and across the globe, with India contributing a major part of the global burden. The number of people with diabetes in India increased from 26.0 million. The prevalence in 2016 was highest in South India and apart from other states high-middle level. The age-standardised daily rate for diabetes increased in India.by 39.6% (32.1–46.7) from 1990 to 2016[1-5] .

1.2 Diabetic peripheral neuropathy (DPN)

DiabetesPeripheral Neuropathy, a major complication of type 2 diabetes, affects up to half of all diabeticsand increases the risk of foot ulceration and amputation. Inadequate proprioceptive signals, decreased postural balance, and a greater risk of falling are all symptoms of sensory and motor deficits[6-9].

1.3 Peripheral Nervous system (PNS)

The two separate parts of the body's neurological system are the central nervous system (CNS) and the peripheral nervous system (PNS). CNS is composed of the brain and spinal cord (CNS). All of the nerves that emerge from CNS and head to muscles, glands, and sensory organs are collectively referred to as the peripheral nervous system (PNS). The PNS connects the CNS to the rest of the body's systems[10-15].

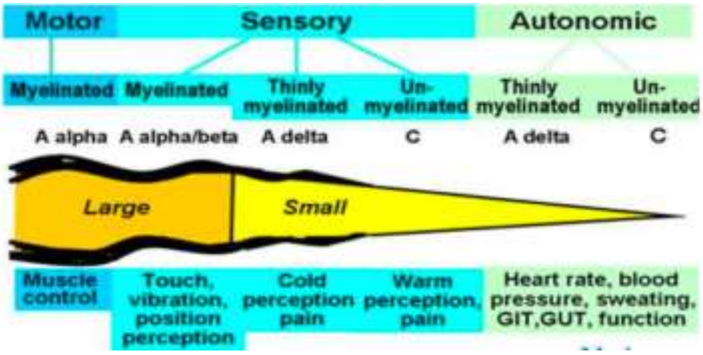


Figure 1. A Simplified view of Peripheral Nerve System (PNS)

Fig.1. shows the simplified view of Peripheral Nerve System (PNS). It consists of the following neuropathy fibers:

- Large myelinated fibers, ‘A’ alpha fibers and ‘A’ beta fibers
- Thinly myelinated fibers (A-delta)
- Unmyelinated fibers, the C fibers.

The functionality of the neuropathy fibers are given in Table 1.

Table 1 Functions of Neuropathy Fibers

Types of Neuropathy Fibers	Functions
Large myelinated fibers (A alpha fibers and A-beta fibers)	Muscle control as well as touch, vibration, and position perception
Small Thinly myelinated fibers (A delta Fibers)	Cold perception pain
Small Unmyelinated fibers (C Fibers)	Warm perception pain
Autonomic Thinly myelinated and Unmyelinated fibers (A delta Fibers and C Fibers)	Regulate heart rate, blood pressure, sweating, and gastro-intestinal and genitourinary function.

1.4Varmam :

Varmam medicine is the Siddha System of Medicine's[16], Contributed by the Siddhars for the benefit of mankind. Siddha medicine, one of India's oldest indigenous systems, contains a library of traditional formulations for internal use and a variety of additional distinct techniques/therapies for external use. Varmam is one of these therapies that is used to treat a variety of diseases, particularly those that are related to the digestive system. Varmam spots are locations where the Prana energy resides and activates both body and life energy. These sites can be found at nerve, naadi, muscle, and bone junctions. They are bio-energetic areas that help the body's physiological activitiesThe healing application called Varma Vaidhiya is used to treat patientssuffering from Lifestyle Disease, Diabetes, Paralysis, Nervous Disorder, and other conditions. Its combat application is known as Varma adi, meaning"pressure point striking". This Varma Therapy has evolved in different forms like Acupuncture and Acupressure also as per Medical Experts[17].Siddhar Agathiyar provided a written form that was widely adopted. The science of Varma Therapy was propagated by Agathiyar through other Siddhars like Bogar, Puli Paani, and Ramadevar. The following poem contains this information. Scriptures written by Siddhar Agasthiyar on palm leaf are no longer available. saints who lived with him understood the essence of the Siddhar Agasthiyar poem and passed it down to their disciples and subsequent generations[18].

"Panbaaga Agathiyanaar, Ramadevar
Panivaaga Boga Munivar thaanum
Paruvamaai manidhargal pizaikavendru
Paangaaga sonnadhoru noolgal kandu
Paarthidave surukamai prithusonnen".
-Kaimathirai Thiravukol-

1.5 Varma System of DPN Treatment

Varmam focuses on saram and its journey, whereas yoga focuses on energising and strengthening. Health is the first step in spiritual travel; the body should be kayakalpa. Every position in Yoga is a pull and push by self and gravitation, a stretch inward and outward, and we achieve all of this through Varmam. ThisPractice is a Natural Healing System of Treatment for Paralysis, Sciaticpain, Migraine, Tremors/Parkinson's Diabetic neuropathy, Muscular twitching & cramps, Trigeminal Neuralgia Facial or Bell's palsy, Urinary incontinence,Disc bulge or prolapse, Frozen shoulder, Muscular and joint pain, Frozen joints ,Muscular strain, Respiratory conditions, Digestion ,Elimination problems, Nervous system disorders, Headaches and migraines Glandular tissues[19-20]. The effect of Varma therapy on selected with diabetic peripheral neuropathy's persons Varma points performance and nerve function while receiving Varmam treatment.Varmam is an ancient science that investigates the physiological impact of living things in humans. Varmam is a martial art that incorporates a wide range of health benefits. It is a holistic and healing science for living a healthy lifestyle. It is one of the earliest collections of diagnostic and therapeutic knowledge.Tamil Siddhas founded this therapeutic in ancient times, and it was passed down through the years by oral tradition, palm leaf, and paper texts.Varmam refers to the importance of keeping one's body clean as well as the potential to alleviate illnesses by activating key places.Varmam help to prevent DPN problems by enhancing stomach fire and aiding in healthy food digestion through neurological and soft tissue massage. and the retention of healthy blood flow and fresh oxygen[21-26].

2.MATERIALS AND METHODS:

The data from the study sample was analysed for Physiological in relation to pre and post-tests

among experimental group and control group. Thirtymen's with DPN from Tamil Nadu,were chosen as study participants. The participants were split into two groups of fifteen people each. The experimental group I received Varma Therapy and the control group II received no practice.

Flow Chart for Evaluation of DPN Persons

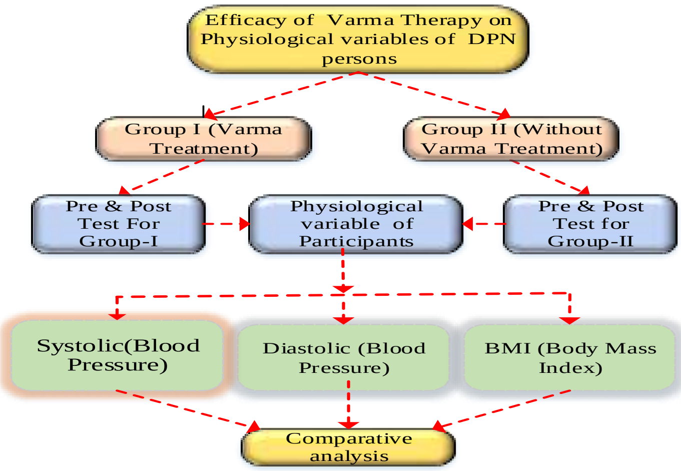

Efficacy of Varma Therapy on Physiological variables of DPN persons
Group I (Varma Treatment)
Group II (Without Varma Treatment)
Pre & Post Test For Group-I
Physiological variable of Participants
Pre & Post Test for Group-II
Systolic(Blood Pressure)
Diastolic (Blood Pressure)
BMI (Body Mass Index)
Comparative analysis

Figure :2 Evaluation of DPN Persons

Figure 2 shows flow chart of evaluation of DPN persons.As mentioned above, twogroups are used for the impact analysis of Varma practiced to DPNin relation to health Physiological variables such as systolic,diastolicBlood Pressure,and BMI obtained before and after the test.Varma helps to tune the nervous system, resulting in more controlled blood flow throughout the body. Every manipulation of movement affects a different set of Varma points, allowing for better health, better relaxation and overall body awareness. Finally, the participants data are compared and analysed for the improvementof research.

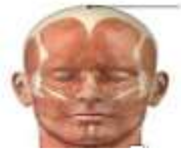
2.1INVESTIGATIONS

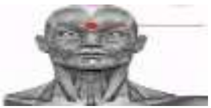
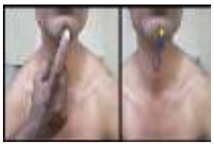
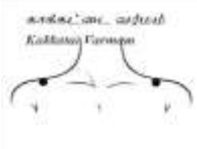
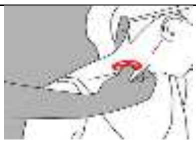
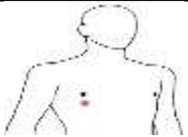
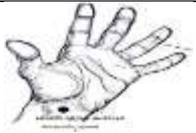
Routine complete blood count, urinary, and biochemical examinations were performed to rule out additional pathology and determine the underlying reason. Blood sugar levels, both fasting and postprandial, were kept within normal limits. Varmam will improve the nerve fuction without causing any Side effect.

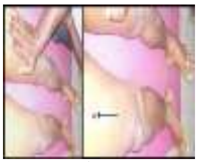
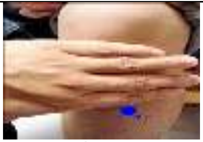
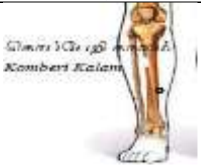
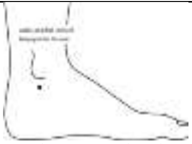
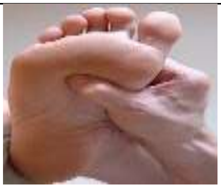
2.2 TREATMENT PROTOCOL

The patient was examined six times a week at Varmam practice for 12 weeks, and the first experimental group received varmam . In DPN patients, diabetic drugs were also continued. The patient's range of motion, strength, and discomfort all improved dramatically after varmam treatment. The table below gives brief descriptions and locations of the various varmam points.

Table 2 Treatment Protocol

Treatmentprotocol Varmam Points	Location	Image
Kodaikolli(Uchi) varmam	Top point of the skull	 உச்சிவர்மம்

Thilarthavarmam	Situated one grain size below the midpoint of both the eyebrows. (Between the Eye Brow region.)	 திலர்த்தவர்மம்
Ottuvarmam	A small depression below the chin.	 ஒட்டுவர்மம்
Kaakkattai	Midway between the neck and head of arms, four fingers above from midline of the clavicle. Place the middle three fingers over the supraclavicular fossa; Press and release	
Pakka-KaluthuNadukkuVarmam	Situated between anterior neck (Adam's apple) to posterior neck.	 பக்க-கழுத்துநடுக்குவர்மம்
NherVarmam	Varmam is located in the middle of the thorax.	 நேர்வர்மம்
EllurukkiVarmam	Below 2.5 Finger breath nipple point.	 எள்ளுருக்கிவர்மம்
Palla Varma	Muscles situated in the lateral lumbar portions of the abdominal region.	 பள்ளவர்மம்
UrumiKaalam	Situated at the end of the Sternum bone point in between the rib cage.	 **உருமிகாலம்**
Nangana Poottu	Two small dents found on either side of the back muscles in the sacroiliac joint.	 நங்கனபூட்டு
ManibandhaVarmam	-Middle of the wrist joint (ventral aspect). -Place the middle of the thumb (palmar aspect) and give moderate pressure 3 times.	 மணிபந்தவர்மம்

AamaiKaalam	Situated at the mid portion of the thighs.	 ஆமைகாலம்
Ganapathy MughaVarmam	Situated at the knee cup portion of the below 4 FB.	 கணபதிமுகவர்மம்
komberikalam	Eight fingers above the medial malleolus.	 கொம்பேறிகாலம்
kuthikalvarmam	Sevenfingerbreadthsabovetheheel(posterioraspect)	 குதிகால்வர்மம்
KanpugaichalVarmam	One finger breadth below the lateral malleolus.	 கண்புகைச்சல்வர்மம்
Ullankalvellaivarmam	At the junction of big and second toe in plantar region.	 உள்ளங்கால்வெள்ளைவர்மம்

2.3 Experimental Data

Acceptance/exclusion criteria Patients with DPN, with or without pain, who met the inclusion criteria were included in the study.The questionnaire aims to collect the data on thepatients' physiology variables, peripheral neuropathy duration, pain scores (0–10), type and duration (in hours) of physical activity, patient's perception of benefits of Varma treatment use before diagnosis, classification of Varma points, types of Varma points utilised, resources surveyed, safety, and efficacy of Varma treatment. Patients received pre-made standard forms that had been evaluated by the experimenter. The patients' histories, diagnoses, and other information were recorded, along with their demographics.

3. Result :

3.1 Calculations in statistics

The Statistical Package for the Social Sciences (SPSS) 19.0 was used to analyse the study's data. The results were described using frequencies, percentages, averages, and standard deviations. Features of SPSS, from its beginnings as a tool for statistical analysis to how it has developed into a preferred option for academics across many industries. Researchers must comprehend the specifics of SPSS in order to comprehend why they should use it, especially young researchers[27-28] .

3.2 Interpretation of Result

If $t_{cal} < t_{tab}$ Value , AcceptH_o there is no relationship between Varma practice (Experimental Group) to three variables. If $t_{cal} > t_{tab}$ Value , RejectedH_o there is relationship between Varma practice (Experimental Group) to three variables. If $t_{cal} < t_{tab}$ Value, AcceptH_o there is no relationship between without Varma practice (Control Group) to three variables. If $t_{cal} > t_{tab}$ Value , RejectedH_o there is relationship between without Varma practice(Control Group) to three variables. Degree of freedom (df) = n-1 So df= 14.Then t table value is 14 df = 2.14.

3.3 Paired Samples T Test For Pre-test and Post-test for Group I

Table 3 Paired Samples T Test For Pre-test and Post-test for Group I(experimental Group-I)

Paired Samples T Test									
Paired Samples	Paired Differences						t	df	Sig. (2-tailed)
Variables	Test	Mean	Std.Dev.	Std.Error Mean	Lower	Upper			
Systolic Pressure (Pair-1)	Pre-test Post-test	28.54	22.36	5.773	16.16	40.92	4.943	14	.000
Diastolic pressure (Pair-2)	Pre-test Post-test	14.54	10.162	2.624	8.906	20.161	5.539	14	.000
Body Mass Index (Pair-3)	Pre-test Post-test	.6860	1.1245	.2903	.0632	1.3087	2.363	14	.033

The analysis tool was used to examine the experimental Group-I and Group-2. Table-3Systolic blood Pressurepresents the pre-test and post-test in Varma Therapy as Mean Value 28.54, Std.Deviation22.36, Std.Error Mean 5.773, lower value 16.16 upper value 40.92, t value -4.943, df 14 respectively, resulted in Sig. (2-tailed) of .000,the t calculation value of 4.943 greater than the table value of 2.14 so its considered statisticallysignificant difference between the pre &post-test means at 0.05 level of confidence for the both test of Systolic blood pressure in Varma Therapy.Diastolic Pressurepresents the pre-test and post-test in Varma Therapy as Mean Value 14.54, Std. Deviation10.162, Std.Error Mean 2.624, lower value 8.906 upper value 20.161, t value 5.539, df 14 and resulted in Sig. (2-tailed)of .000, the t calculation value of 5.539 greater than the table value of 2.14 so it's consideredstatisticallysignificant difference between the pre &post-test means at 0.05 level of confidence for the both test of Diastolic blood pressure in Varma Therapy.BMIpresents the pre-test and post-test in Varma Therapy as Mean Value 0.6860,Std.Deviation 1.1245, Std.Error Mean 0.2903, lower value 0.0632 upper value 1.3087, t value 2.363, df 14 and resulted in Sig. (2-tailed) of 0.033, the t calculation value of 2.363 greater than the table value of 2.14 so it's consideredstatisticallysignificant difference between the pre &post-test means at 0.05 level of confidence for the both test of BMI in Varma Therapy.Table 3 reveals that the Systolic, Diastolic and BMI pre- and post-tests in Varma Therapy had a significant value.

3.3 Paired Samples T Test for Pre-test and Post-test for Group-II

Table-4: Paired Samples T Test for Pre-test and Post-test Group-II (Control Group)

Paired Samples T Test									
Paired Samples	Paired Differences						t	df	Sig. (2-tailed)
Variables	Test	Mean	Std. Dev.	Std. Error Mean	Lower	Upper			
Systolic Pressure (Pair-1)	Pre-test Post-test	-.533	5.566	1.437	-3.616	2.549	-.371	14	.716
Diastolic pressure (Pair-2)	Pre-test Post-test	-.600	1.502	.388	-1.432	.232	-1.547	14	.144
Body Mass Index (Pair-3)	Pre-test Post-test	-.3440	.7435	.1919	-.7557	.0677	-1.792	14	.095

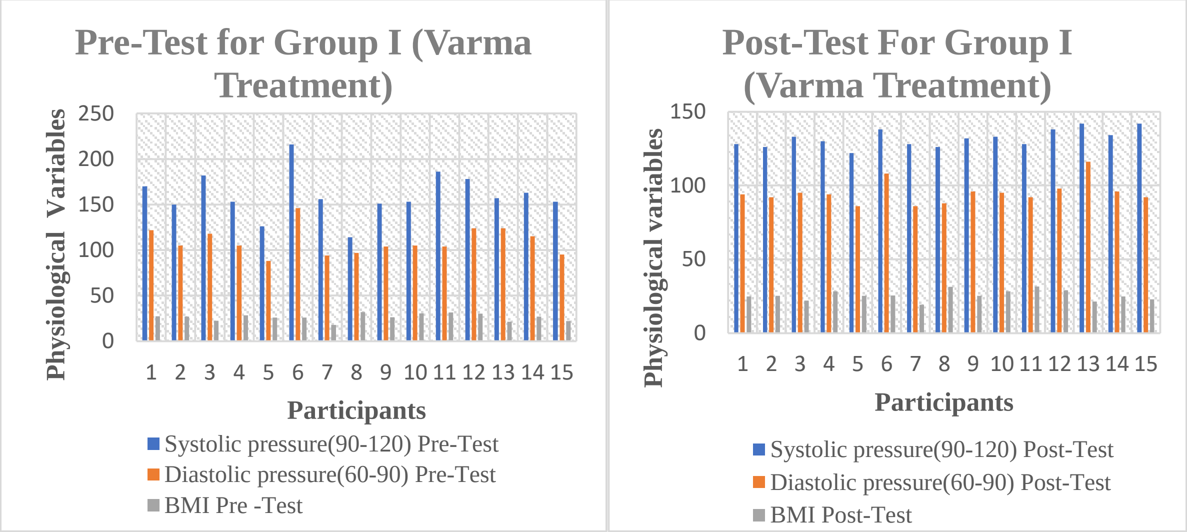
Table 4 shows the SPSS analysis of Systolic pressure presents the pre-test and post-test in Control Group-II without Varma Therapy as Mean Value -0.533, Std.Deviation 5.566, Std.Error 1.437, Mean lower value -3.616 upper value 2.549, t value -0.371, df 14 and respectively, resulted in Sig. (2-tailed) of 0.716.the t calculation value of -0.0371 Less than the table value of 2.14 so it’s considered statisticallyno significant difference between the pre &post-test means at 0.05 level of confidence for the both test of Systolic blood pressure in Without Varma Therapy.Diastolic Pressure presents the pre-test and post-test in without Varma Therapy asMean Value -0.600, Std.Deviation 1.502, Std.Error Mean 0.388, lower value -1.432 upper value .232, t value -1.547, df 14 and respectively, resulted in Sig. (2-tailed) of 0.144.the t calculation value of -1.547 Less than the table value of 2.14 so it’s considered statistically no significant difference between the pre &post-test means at 0.05 level of confidence for the both test of Diastolicblood pressure in Without Varma Therapy.BMI presents the pre-test and post-test inwithout Varma Therapy as Mean Value -0.3440, Std.Deviation 0.7435, Std.Error 0.1919, Meanlower value -0.7557 upper value 0.0677, t value -1.792, df 14 and respectively, resulted in Sig. (2-tailed) of 0.095.the t calculation value of -1.792 Less than the table value of 2.14 so it’s consideredstatistically no significant difference between the pre &post-test means at 0.05 level of confidence for the both test of BMI in without Varma Therapy. Table4 reveals that the Systolic, Diastolic and BMI pre- and post-tests in without Varma Therapy had a no Significant value.

4.Discussion

DPN, which is characterised by gradually worsening discomfort, decreased proprioceptive and sensory acuity, vibration awareness, and suboptimal postural stability, is one of the most common consequences of diabetes. The morbidity and mortality rates are frequently high in DPN patients. In therapeutic settings, Varma point stimulation is extensively applied in Tamil Nadu to treat DPN. Varma treatment given better result for

DPN persons However, to demonstrate the efficacy of Varma treatment in the management of DPN, a carefully designed systematic review is still needed to globally.

4.1 Graph I and II Pre-test and Post-test for Group-I



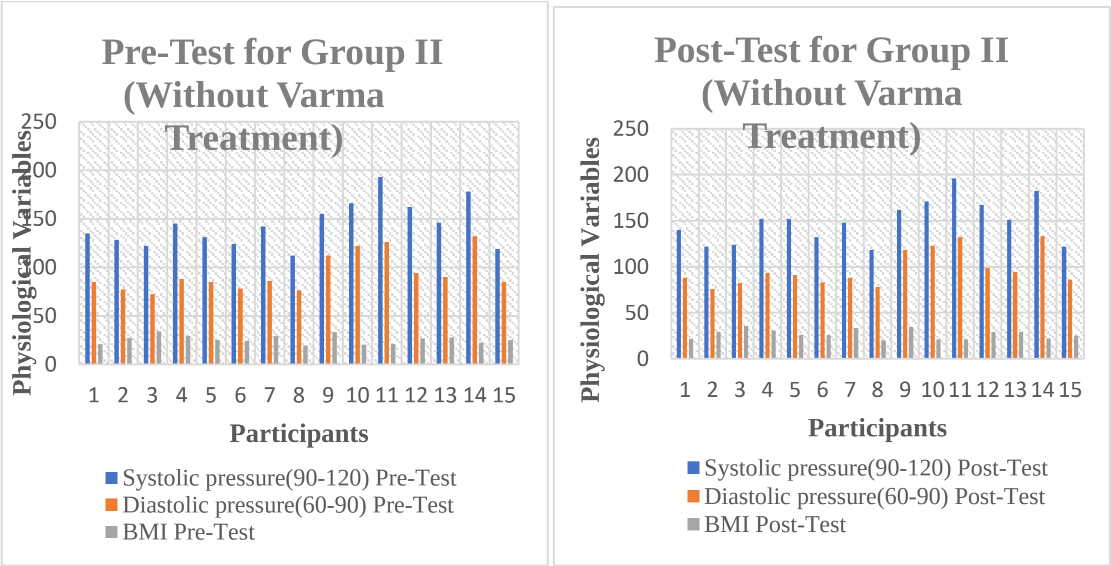
(a)Graph-IPre-Test for Varma Treatment(b) Graph-IIPost-Test for Varma Treatment

Fig. 3: Pre and Post Test data of Experimental Group I (With Varma Practice)

Varma Therapy was given to fifteen patients in an experimental group-1. In graphs 1 and II, the x axis represented the number ofparticipants, while the y axis represented physiological data including Systolic and Diastolic pressure, and BMI. Following the pre-test, the participants were given Varma point stimulation treatment protocol as mentioned in Table 2. The post-test diagnosis reveals thebenefits of varma treatmentin experimental group-1.

4.2 Graph III and IV Pre-test and Post-test for GroupII

Participants in Group -2 control group did not benefit significantly, as seen in graph III and IV as shown in Figure 4. The participants were not provided any practice after the pre-test. Comparing the results of pre- and post-tests, there was no significant difference in systolic, diastolic, or BMI. The graph shows that there is no positive outcomes.



(a) Graph-III Pre-Test for Control Group (b) Graph-IV Post-Test for Control Group

Fig. 4: Pre and Post Test data of Control Group II (Without Varma Practice)

5. Conclusion

Varma Therapy was significantly more effective in Experimental Group I than the Control Group II. After 12 weeks of varma practice significantly normalizing the physiological variables such as SystolicBlood pressure, DiastolicBlood pressure and reducing the Body Mass Index in the experimental group. Also, the Varma practice improves gait posture, energy level, nerve function, stability and reducing DPN.

6. Recommendation

Varma point stimulation is widely utilised in clinical practice in Tamilnadu to treat DPN. According to the study's findings, performing Varma Vital point manipulation treatments on a regular basis can decrease DPN levels. It is determined that DPN persons' Physiological levels are positively impacted by Varma practice, since it's recommended that the Varma vital points will utilize for the human fraternity.

Reference:

1.Waldfogel, J. M., Nesbit, S. A., Dy, S. M., Sharma, R., Zhang, A., Wilson, L. M., ... & Robinson, K. A. (2017). Pharmacotherapy for diabetic peripheral neuropathy pain and quality of life: a systematic review. Neurology, 88(20), 1958-1967.

2. Randhir Singh (2013) Diabetic peripheral neuropathy: Current perspective and future directions: Received 26 August 2013 Received in revised form 26 November 2013 Accepted 16 December 2013.

3. Nizar Abdul Majeed (2019) “Physical Therapy for Diabetic Peripheral Neuropathy”. Vol. 30, No.1, 2019; doi 10.5463/DCID.v30i1.760.

4. Kannan, Ramya (2019-11-14). "India is home to 77 million diabetics, second highest in the world". The Hindu. ISSN 0971-751X. Retrieved 2020-04-29.

5.Tandon, Nikhil (2018); "The increasing burden of diabetes and variations among the states of India: The Global Burden of Disease Study 1990–2016". The Lancet Global Health. 6 (12): e1352–e1362.

6.Aaron I. Vinik(2008) Diabetic Neuropathy in Older Adults. Clin Geriatr Med 24 (2008) 407–435.

7. Boulton AJ (2005): Management of diabetic peripheral neuropathy. Clin Diabetes 2005; 23:9–15.

8. Armstrong DG (1998) Diabetic foot ulcers: prevention, diagnosis and classification. Am Fam Physician 1998; 57: 1325–1332, 1337–1338.

9.Levin ME(1998) Diabetes and peripheral neuropathy. Diabetes Care 1998;21:1.

10. Gutierrez EM (2001) Mild diabetic neuropathy affects ankle motor function. Clin Biomech 2001;16:522–528.

11. Morrison S(2012) Relation between risk of falling and postural sway complexity in diabetes. Gait Posture 2012;35:662–668. 25.

12. Richardson, J. K., &Hurvitz, E. A. (1995). Peripheral neuropathy: a true risk factor for falls. The Journals of Gerontology Series A: Biological Sciences and Medical Sciences, 50(4), M211-M215.

13. Simoneau, G. G., Derr, J. A., Ulbrecht, J. S., Becker, M. B., & Cavanagh, P. R. (1996). Diabetic sensory neuropathy effect on ankle joint movement perception. Archives of physical medicine and rehabilitation, 77(5), 453-460.

14.Manickavelu, P., & Kaliyaperumal, A. B. (2022). Prevalence of Diurnal Physical Mobility and Sedentary Behavior among Allied Healthcare College Students in Puducherry, India. International Journal of Epidemiology and Health Sciences, 3(3).

15.Jagadevan, M., Mohanakrishnan, B., Bhavanani, A. B., Shristhudhi, D., Arumugam, P., Subbiah, B., & Swaminathan, P. (2021). Additive effect of “Brahma Mudra” on pain, proprioception and functional abilities in non-specific mechanical neck pain. Journal of Bodywork and Movement Therapies, 27, 717-722.

16.Karunamoorthi, K., Jegajeevanram, K., Xavier, J., Vijayalakshmi, J., & Melita, L. (2012). Tamil traditional medicinal system-siddha: an indigenous health practice in the international perspectives. CELLMED, 2(2), 12-1.

17. S.Karthik Nagarajan(2018)Varmam therapy in Siddha System of Medicine Int. J. Curr. Res. Med. Sci. (2018). 4(1): 10-17.

18. Sugunthan, S., Shailaja, R., & Mohamed Musthafa, M. (2016). A review on fundamental principles of varmam–An ancient siddha medical science. Int J Ayu Pharm Chem, 4(3), 169-176.

19.KaṇṇaṉRājārām, T. (2007). Varma maruttuvattiṉ aṭippaṭaikaḷ (Fundamentals of Varma Medicine).

20. Ponnappan, P. (2013). Effect Of Varma Therapy And Yoga Therapy On Selected Physiological Bio-Chemical And Psychological Variables Of Diabetic Patients (Doctoral Dissertation, Tamil Nadu Physical Education And Sports University).

21.Sudhan, P., Subbiah, B., JahiraParveen, S., & Sukumaran, R. (2022). Using Varma Treatments To Improve The Physiological Variables Performance Of Silambam Players Affected By Diabetic Peripheral Neuropathy. Journal Of Positive School Psychology, 5024-5034.

22. Murugesan, S. (2018). Effect of yoga practices with and without varma therapy on selected physiological biochemical and psychological variables among aged type ii diabetic men (Doctoral dissertation, Tamil Nadu Physical Education and Sports University Chennai).

23.Ramaswamy, R. S. (2017). Guidelines for practice of Siddha Varmam therapy. Central Council for Research in Siddha, 62-71.

24.Meena, R., Natarajan, S., Anbarasi, C., & Sathiyarajeswaran, P. (2021). Siddha Varmam and Thokkanam therapy in the treatment of adhesive capsulitis-A case report. Journal of Ayurveda and Integrative Medicine, 12(2), 373-377.

25.Mehta, P., Dhapte, V., Kadam, S., &Dhapte, V. (2017). Contemporary acupressure therapy: Adroit cure for painless recovery of therapeutic ailments. Journal of traditional and complementary medicine, 7(2), 251-263.

26. Dr. Nithyananda Kala, A. Parameswari (2021). NerVarmam and its Anatomical Structures -Literature review. International Journal of Advance Research, Ideas and Innovations in Technology.

27.Maric, M., de Haan, E., Hogendoorn, S. M., Wolters, L. H., & Huizenga, H. M. (2015). Evaluating statistical and clinical significance of intervention effects in single-case experimental designs: An SPSS method to analyse univariate data. Behaviour Therapy, 46(2), 230-241.

28.Pallant, J. (2020). SPSS survival manual: A step by step guide to data analysis using IBM SPSS. Routledge.